EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L9	129	(KOCHER near PAUL) (JAFFE near JOSHUA) (JUN near BENJAMIN) (CRYPTOGRAPHY NEAR RESEARCH)	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 19:40
L10	124	9 and ((measur$5 stud$4 analy$4 analytical$3 review$3 determin$5 calculat$3 comput$5 assess$4 quantif$4 evaluat$3 consum$6 us$3 utiliz$3) near3 (attribut$3 radiat$3 electromagnetic power electric$3 voltage current noise signal$3 consum$6 us$3 utiliz$3))	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 19:41
L11	23	10 and (command$3 signal$3 instruct$4) near3 (send$3 transmit$4 giv$3)	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 19:45
L12	3	11 and ((analog adj3 (convert$3 device component)) same key)	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 19:47

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L13	160	380/1	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 19:52
L14	61	13 and (command$3 signal$3 instruct$4 order$3) near3 (send$3 transmit$4 giv$3)	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 19:54
L15	57	14 and ((measur$5 stud$4 analy$4 analytical$3 review$3 determin$5 calculat$3 comput$5 assess$4 quantif$4 evaluat$3 consum$6 us$3 utiliz$3) near3 (attribut$3 radiat$3 electromagnetic power electric$3 voltage current noise signal$3 consum$6 us$3 utiliz$3))	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 19:55
L16	0	15 and ((analog adj3 (convert$3 device component)) same key)	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 19:56
L17	1	15 and (((digit$5 analog) adj3 (convert$3 device component)) same key)	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 19:57

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L18	137283	"380"/$.ccls. "713"/$.ccls. "726"/$.ccls. "705"/$.ccls. "709"/$.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 19:58
L19	56856	18 and (command$3 signal$3 instruct$4 order$3) near3 (send$3 transmit$4 giv$3)	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 19:58
L20	669	19 and (((digit$5 analog) adj3 (convert$3 device component)) same key)	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 19:59
L22	650	20 and ((measur$5 stud$4 analy$4 analytical$3 review$3 determin$5 calculat$3 comput$5 assess$4 quantif$4 evaluat$3 consum$6 us$3 utiliz$3) near3 (attribut$3 radiat$3 electromagnetic power electric$3 voltage current noise signal$3 consum$6 us$3 utiliz$3))	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 20:00
L23	123	22 and (key cryptograph$6 secret cod$3) near3 (leak$3 reveal$3 expos$3 disclos$3 uncover$3 revelation giveaway)	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 20:06
L24	34	23 and ((analog adj3 (convert$3 device component)) same key)	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 20:08

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L25	3200	(analog adj3 (convert$3 device component)) same key	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 20:25
L26	163	25 and (key cryptograph$6 secret cod$3) near3 (leak$3 reveal$3 expos$3 disclos$3 uncover$3 revelation giveaway)	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 20:25
L27	104	26 and (command$3 signal$3 instruct$4 order$3) near3 (send$3 transmit$4 giv$3)	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 20:25
L28	98	27 and ((measur$5 stud$4 analy$4 analytical$3 review$3 determin$5 calculat$3 comput$5 assess$4 quantif$4 evaluat$3 consum$6 us$3 utiliz$3) near3 (attribut$3 radiat$3 electromagnetic power electric$3 voltage current noise signal$3 consum$6 us$3 utiliz$3))	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 20:28
L29	26	28 and @ad<"19980102"	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 20:29

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	8	US-5293029-$.DID. OR US-5428684-$.DID. OR US-5539825-$.DID. OR US-5907832-$.DID. OR US-5914471-$.DID. OR US-6070795-$.DID. OR US-6247129-$.DID. OR US-6393567-$.DID.	US-PGPUB; USPAT; USOCR	OR	OFF	2007/02/17 18:38
L3	1	"20020124178".pn.	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 17:23
L7	6	1 and ((measur$5 stud$4 analy$4 analytical$3 review$3 determin$5 calculat$3 comput$5 assess$4 quantif$4 evaluat$3 consum$6 us$3 utiliz$3) near3 (attribut$3 radiat$3 electromagnetic power electric$3 voltage current noise signal$3 consum$6 us$3 utiliz$3))	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 18:35
L8	2	7 and (command$3 signal$3 instruct$4) near3 (send$3 transmit$4 giv$3)	US-PGPUB; USPAT; USOCR	OR	ON	2007/02/17 18:37

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L34	49	((measur$5 analy$4 determin$5 calculat$3 comput$5 assess$4 quantif$4 evaluat$3 consum$6) and (attribut$3 radiat$3 electromagnetic power electric$3 voltage current noise signal$3 consum$6 us$3 utiliz$3) and analog and (convert$3 device component) and (key cryptograph$6 secret cod$3 encod$3 encipher$3 cipher$3) and (command$3 signal$3 instruct$4 order$3) and (send$3 transmit$4 transmission giv$3)and (leak$3 reveal$3 expos$3 disclos$3 uncover$3) and (record$3 writ$4 sav$3 stor$3 keep$3)).CLM.	US-PGPUB	OR	ON	2007/02/17 20:44

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1 An Ultra Low Power System Architecture for Sensor Network Applications   ■
Mark Hempstead, Nikhil Tripathi, Patrick Mauro, Gu-Yeon Wei, David Brooks
May 2005 **ACM SIGARCH Computer Architecture News , Proceedings of the 32nd Annual International Symposium on Computer Architecture ISCA '05**, Volume 33 Issue 2
Publisher: IEEE Computer Society, ACM Press
Full text available: 📄 pdf(332.56 KB)   Additional Information: full citation, abstract, citings, index terms

Recent years have seen a burgeoning interest in embedded wireless sensor networks with applications ranging from habitat monitoring to medical applications. Wireless sensor networks have several important attributes that require special attention to device design. These include the need for inexpensive, long-lasting, highly reliable devices coupled with very low performance requirements. Ultimately, the "holy grail" of'this design space is a truly untethered device that operates off of energy sc ...

2 Smart Clothing Prototype for the Arctic Environment   ■
J. Rantanen, J. Impiö, T. Karinsalo, M. Malmivaara, A. Reho, M. Tasanen, J. Vanhala
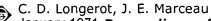January 2002 **Personal and Ubiquitous Computing**, Volume 6 Issue 1
Publisher: Springer-Verlag
Full text available: 📄 pdf(270.59 KB)   Additional Information: full citation, abstract, index terms

Continuous miniaturisation of electronic components has made it possible to create smaller and smaller electrical devices which can be worn and carried all the time. Together with developing fibre and textile technologies, this has enabled the creation of truly usable smart clothes that resemble clothes more than wearable computing equipment. These intelligent clothes are worn like ordinary clothing and provide help in various situations according to the application area. This paper describes th ...

3 A real-time/time-share computer in a research and development environment   ■
C. D. Longerot, J. E. Marceau
January 1971 **Proceedings of the 1971 26th annual conference**
Publisher: ACM Press
Full text available: 📄 pdf(878.06 KB)   Additional Information: full citation, abstract, references, index terms

A centralized computer with high speed peripherals, mass storage and very flexible input/output ports provides eighteen remote laboratory terminals with real-time/time-share computer service. The EMR 6130 Computer with Sandia designed interfacing provides real-time response in research and development activities involving on-line data

acquisition, analysis and display, and includes features which allow process control and equipment programming activities. The system supports a variety of co ...

Keywords: Centralized computer, Computer interfaces, Data acquisition/display, Data transmission, Equipment programming, Experiment interface, Experimenter data interaction, Real-time computer service, Real-time monitor, Remote laboratory terminals, Remote time-share service

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4 Converter and communication circuits: A 120nm low power asynchronous ADC

E. Allier, J. Goulier, G. Sicard, A. Dezzani, E. André, M. Renaudin

August 2005 **Proceedings of the 2005 international symposium on Low power electronics and design ISLPED '05**

Publisher: ACM Press

Full text available: pdf(3.65 MB)   Additional Information: full citation, abstract, references, index terms

This paper discusses the development of a new kind of low power processing chain which dynamically adapts sampling frequency to signals. Thus, the design of an Asynchronous Analog-to-Digital Converter (A-ADC) is tackled. Its principle is based on a non-uniform sampling scheme and asynchronous technology, that allow significant activity and power savings. A test chip targetting 10-bit speech applications has been fabricated using the 120nm CMOS process from STMicroelectronics. The power consumpti ...

Keywords: analog-to-digital conversion, asynchronous technology, level-crossing sampling

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5 Mixed analog-digital design: On the dynamic behavior of a novel digital-only sigma-- delta A/D converter

Marcel Jacomet, Josef Goette, Venanz Zbinden, Christian Narvaez

September 2004 **Proceedings of the 17th symposium on Integrated circuits and system design SBCCI '04**
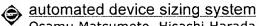
Publisher: ACM Press

Full text available: pdf(293.94 KB)   Additional Information: full citation, abstract, references, index terms

Conventional sigma-delta ($\Sigma\Delta$) analog-to-digital (Ad) converters are based on an analog $\Sigma\Delta$ modulator followed by a digital filter. In this paper we propose a new architecture of a first-order $\Sigma\Delta$ modulator that needs *no active* analog components. We call this $\Sigma\Delta$ modulator "digital-only," and implement with it Ad converters in Fpga's or directly in the software of microprocessors. We here discuss aspects of the dynamic behavio ...

Keywords: $\Sigma\Delta$ modulator, A/D converter, FPGA

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6 Analog circuit design: An 11-bit 160-MS/s 1.35-V 10-mW D/A converter using automated device sizing system

Osamu Matsumoto, Hisashi Harada, Yasuo Morimoto, Toshio Kumamoto, Takahiro Miki, Masao Hotta

January 2005 **Proceedings of the 2005 conference on Asia South Pacific design automation ASP-DAC '05**

Publisher: ACM Press

Full text available: pdf(579.03 KB)   Additional Information: full citation, abstract, references

This paper describes an automated device sizing system for current-steering D/A converters (DACs) and an 11-bit 160-MS/s DAC implemented using this system. Based on an analysis of harmonic distortion (or spurious) of the DAC, a circuit technique named *One-Vgs Switching* has been newly developed for realizing high spurious free dynamic

range (SFDR). The automated device sizing system has also been developed for quick retargeting of the current-steering DAC. The 11-bit 160-MS/s DAC has been ...

7   Power Attack Resistant Cryptosystem Design: A Dynamic Voltage and Frequency Switching Approach

Shengqi Yang, Wayne Wolf, N. Vijaykrishnan, D. N. Serpanos, Yuan Xie
March 2005 **Proceedings of the conference on Design, Automation and Test in Europe - Volume 3 DATE '05**
Publisher: IEEE Computer Society
Full text available: 💾 pdf(291.83 KB)   Additional Information: full citation, abstract, index terms

A novel power attack resistant cryptosystem is presented in this paper. Security in digital computing and communication is becoming increasingly important. Design techniques that can protect cryptosystems from leaking information have been studied by several groups. Power attacks, which infer program behavior from observing power supply current into a processor core, are important forms of attacks. Various methods have been proposed to countermeasure the popular and efficient power attacks. Howe ...

8   Power minimization in IC design: principles and applications

Massoud Pedram
January 1996 **ACM Transactions on Design Automation of Electronic Systems (TODAES)**, Volume 1 Issue 1
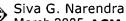**Publisher:** ACM Press

Full text available: 💾 pdf(550.02 KB)   Additional Information: full citation, abstract, references, citings, index terms

Low power has emerged as a principal theme in today's electronics industry. The need for low power has caused a major paradigm shift in which power dissipation is as important as performance and area. This article presents an in-depth survey of CAD methodologies and techniques for designing low power digital CMOS circuits and systems and describes the many issues facing designers at architectural, logical, and physical levels of design abstraction. It reviews some of the techniques and tool ...

Keywords: CMOS circuits, adiabatic circuits, computer-aided design of VLSI, dynamic power dissipation, energy-delay product, gated clocks, layout, low power layout, low power synthesis, lower-power design, power analysis and estimation, power management, power minimization and management, probabilistic analysis, silicon-on-insulator technology, statistical sampling, switched capacitance, switching activity, symbolic simulation, synthesis, system design

9   Challenges and design choices in nanoscale CMOS

Siva G. Narendra
March 2005 **ACM Journal on Emerging Technologies in Computing Systems (JETC)**, Volume 1 Issue 1
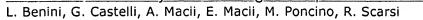**Publisher:** ACM Press
Full text available: 💾 pdf(5.35 MB)   Additional Information: full citation, abstract, references, index terms

The driving force for the semiconductor industry growth has been the elegant scaling nature of CMOS technology. In this article, we will first review the history of technology scaling that follows Moore's law from the prespective of microprocessor designs. Challenges to continue the historical scaling trends will be highlighted and design choices to address two specific challenges, process variation and leakage power, will be discussed. In nanoscale CMOS technology generations, supply and thresh ...

Keywords: CMOS, leakage power, nanoscale, process variation

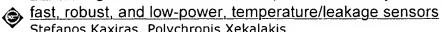**10** A discrete-time battery model for high-level power estimation

L. Benini, G. Castelli, A. Macii, E. Macii, M. Poncino, R. Scarsi

January 2000 **Proceedings of the conference on Design, automation and test in Europe DATE '00**

Publisher: ACM Press

Full text available: pdf(200.45 KB)

Publisher Site

Additional Information: full citation, references, citings, index terms

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11 Technologies and devices for low-power: 4T-decay sensors: a new class of small, fast, robust, and low-power, temperature/leakage sensors

Stefanos Kaxiras, Polychronis Xekalakis

August 2004 **Proceedings of the 2004 international symposium on Low power electronics and design ISLPED '04**
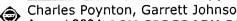
Publisher: ACM Press

Full text available: pdf(169.85 KB)   Additional Information: full citation, abstract, references, index terms

We present a novel temperature/leakage sensor, developed for high-speed, low-power, monitoring of processors and complex VLSI chips. The innovative idea is the use of 4T SRAM cells to measure on-chip temperature and leakage.Using the dependence of leakage currents to temperature, we measure varying decay (discharge) times of the 4T cell at different temperatures. Thus, decaying 4T sensors provide a digital pulse whose frequency depends on temperature. Because of the sensors' very small size, we ...

Keywords: 4T SRAM, architecture, leakage, sensor, temperature

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12 Color science and color appearance models for CG, HDTV, and D-CINEMA

Charles Poynton, Garrett Johnson

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**
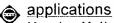
Publisher: ACM Press

Full text available: pdf(1.46 MB)   Additional Information: full citation, abstract

This course introduces the science behind image digitization, tone reproduction, and color reproduction in computer generated imagery (CGI), HDTV, and digital cinema (D-cinema). We detail how color is represented and processed as images are transferred between these domains. We detail the different forms of nonlinear coding ("gamma") used in CGI, HDTV, and D-cinema. We explain why one system's *RGB* does not necessarily match the *RGB* of another system. We explain color specification ...

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13 Power supply design: On-chip digital power supply control for system-on-chip applications

Maurice Meijer, José Pineda de Gyvez, Ralph Otten

August 2005 **Proceedings of the 2005 international symposium on Low power electronics and design ISLPED '05**

Publisher: ACM Press

Full text available: pdf(260.14 KB)   Additional Information: full citation, abstract, references, index terms

We present an on-chip, fully-digital, power-supply control system. The scheme consists of two independent control loops that regulate power supply variations due to semiconductor process spread, temperature, and chip's workload. Smart power-switches working as linear voltage regulators are used to adjust the local power supply. The smart power-switch allows us to keep the global power network unchanged. It offers an integrated standby mode and has a fast dynamic response, i.e. low transition tim ...

Keywords: adaptive voltage scaling, low power, performance optimization

14 Security as a new dimension in embedded system design: Security as a new dimension in embedded system design

Srivaths Ravi, Paul Kocher, Ruby Lee, Gary McGraw, Anand Raghunathan

June 2004 **Proceedings of the 41st annual conference on Design automation DAC '04**

Publisher: ACM Press

Full text available: pdf(209.10 KB)   Additional Information: full citation, abstract, references, citings, index terms

The growing number of instances of breaches in information security in the last few years has created a compelling case for efforts towards secure electronic systems. Embedded systems, which will be ubiquitously used to capture, store, manipulate, and access data of a sensitive nature, pose several unique and interesting security challenges. Security has been the subject of intensive research in the areas of cryptography, computing, and networking. However, despite these efforts, *security is* ...

Keywords: PDAs, architectures, battery life, cryptography, design, design methodologies, digital rights management, embedded systems, performance, security, security processing, security protocols, sensors, software attacks, tamper resistance, trusted computing, viruses

15 Embedded tutorial 4: Design and power management of energy harvesting embedded systems

Vijay Raghunathan, Pai H. Chou

October 2006 **Proceedings of the 2006 international symposium on Low power electronics and design ISLPED '06**

Publisher: ACM Press

Full text available: pdf(78.84 KB)   Additional Information: full citation, abstract, references, index terms

Harvesting energy from the environment is a desirable and increasingly important capability in several emerging applications of embedded systems such as sensor networks, biomedical implants, *etc*. While energy harvesting has the potential to enable near-perpetual system operation, designing an efficient energy harvesting system that actually realizes this potential requires an in-depth understanding of several complex tradeoffs. These tradeoffs arise due to the interaction of numerous fact ...

Keywords: energy harvesting, power management, solar power, wireless sensors

16 Evaluating Run-Time Techniques for Leakage Power Reduction

David Duarte, Yuh-Fang Tsai, Narayanan Vijaykrishnan, Mary Jane Irwin

January 2002 **Proceedings of the 2002 conference on Asia South Pacific design automation/VLSI Design ASP-DAC '02**

Publisher: IEEE Computer Society

Full text available: pdf(179.27 KB)

Publisher Site   Additional Information: full citation, abstract, citings

While some leakage power reduction techniques require modification of process technology achieving savings at the fabrication stage, others are based on circuit-level optimizations and are applied at run-time. We focus our study on the latter kind and compare three techniques: Input Vector Control, Body Bias Control and Power Supply Gating. We determine their limits and benefits, in terms of the potential leakage reduction, performance penalty and area and power overhead. The importance of the ' ...

17 Behavioral synthesis techniques for intellectual property protection

Farinaz Koushanfar, Inki Hong, Miodrag Potkonjak

July 2005 **ACM Transactions on Design Automation of Electronic Systems (TODAES)**,
Volume 10 Issue 3

Publisher: ACM Press

Full text available: pdf(439.81 KB)   Additional Information: full citation, abstract, references, index terms

We introduce dynamic watermarking techniques for protecting the value of intellectual property of CAD and compilation tools and reusable design components. The essence of the new approach is the addition of a set of design and timing constraints which encodes the author's signature. The constraints are selected in such a way that they result in a minimal hardware overhead while embedding a unique signature that is difficult to remove and forge. Techniques are applicable in conjunction with an ar ...

Keywords: Intellectual property protection, behavioral synthesis, watermarking

18 Tuning garbage collection for reducing memory system energy in an embedded java environment

G. Chen, R. Shetty, M. Kandemir, N. Vijaykrishnan, M. J. Irwin, M. Wolczko

November 2002 **ACM Transactions on Embedded Computing Systems (TECS)**, Volume 1
Issue 1

Publisher: ACM Press

Full text available: pdf(740.23 KB)   Additional Information: full citation, abstract, references, citings, index terms

Java has been widely adopted as one of the software platforms for the seamless integration of diverse computing devices. Over the last year, there has been great momentum in adopting Java technology in devices such as cellphones, PDAs, and pagers where optimizing energy consumption is critical. Since, traditionally, the Java virtual machine (JVM), the cornerstone of Java technology, is tuned for performance, taking into account energy consumption requires reevaluation, and possibly redesign of t ...

Keywords: Garbage collector, Java Virtual Machine (JVM), K Virtual Machine (KVM), low power computing

19 VLSI circuits: Design of a nanosensor array architecture

Wei Xu, N. Vijaykrishnan, Y. Xie, M. J. Irwin

April 2004 **Proceedings of the 14th ACM Great Lakes symposium on VLSI GLSVLSI '04**

Publisher: ACM Press

Full text available: pdf(1.37 MB)   Additional Information: full citation, abstract, references, index terms

This paper describes a nanowire sensor array architecture for high-speed, high-accuracy sensor systems. The chip has very simple processing elements (PEs) in a massively parallel architecture, in which each PE is directly connected to seven sensors. A sampling rate of 100 ns is enough to realized high-speed sensing feedback for electronic nose. We aim to create a very simple architecture, because a compact design is required ton integrate as many PEs as possible on a single chip. A widely used, ...

Keywords: electronic nose, gas sensing, nanowire sensor array, pattern recognition, sensor pre-processing

20 Watermarking algorithms: Exploiting self-similarities to defeat digital watermarking systems: a case study on still images

Gwenaël Doërr, Jean-Luc Dugelay, Lucas Grangé

September 2004 **Proceedings of the 2004 workshop on Multimedia and security
MM&Sec '04**
Publisher: ACM Press
Full text available: 📄 pdf(1.27 MB)   Additional Information: <u>full citation, abstract, references, index terms</u>

Unauthorized digital copying is a major concern for multi-media content providers. Since copyright owners lose control over content distribution as soon as data is decrypted or unscrambled, digital watermarking has been introduced as a complementary protection technology. In an effort to anticipate hostile behaviors of adversaries, the research community is constantly introducing novel attacks to benchmark watermarking systems. In this paper, a generic block replacement attack will be presented. ...

Keywords: block replacement attack, intra-signal collusion, self-similarities

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